LA-UR-22-21480

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Title:	Sandia Canyon Assessment Unit Temperature Study and Use Attainability Analysis - Presentation to Accord Pueblos - February 23, 2022
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Intended for:	Environmental Regulatory Document
Issued:	2022-02-22

Sandia Canyon Assessment Unit Temperature Study and Use Attainability Analysis– Robert Gallegos and Tim Goering (EPC-CP LANL)

The following information will be presented during the February 23, 2022 Accord Pueblos Technical Meeting.

The purpose of the study is to determine if natural thermal conditions are preventing the attainment of Coldwater Aquatic Life Use in the perennial reach of the upper Sandia Canyon Assessment Unit (Sandia AU). The New Mexico Water Quality Standards allow for a change in the designated use if a Use Attainability Analysis (UAA) demonstrates that the use is not attainable due to one or more of six factors listed in 40 CFR 131.10(g), including naturally occurring pollutant concentrations. The Sandia AU is located in a perennial reach of upper Sandia Canyon between Sigma Canyon and NPDES Outfall 001. The classified Segment 20.6.4.126 NMAC comprises perennial waters within Los Alamos National Laboratory boundaries and includes the Sandia AU. Persistent surface flows originate from NPDES permitted effluent releases. These releases have occurred since the early 1950's and continue today. The UAA examines several lines of evidence. NMED's Air-Water Temperature Correlation (AWTC) model is used for identifying appropriate stream classifications and attainable aquatic life use subcategories. The model correlates between July average air temperatures (ATEMP) and maximum weekly average stream temperatures. Air temperatures are obtained from PRISM and LANL Meteorological Towers and used to derive ATEMP. Thermographs were placed in the Sandia AU to obtain measured stream temperatures during summer months when stream temperatures are the highest. Measured data is used with AWTC modeled data to determine if the Sandia AU is meeting its natural air temperature-driven thermal condition.

Use Attainability Analysis
Aquatic Life Uses for Perennial Reach of Sandia Canyon

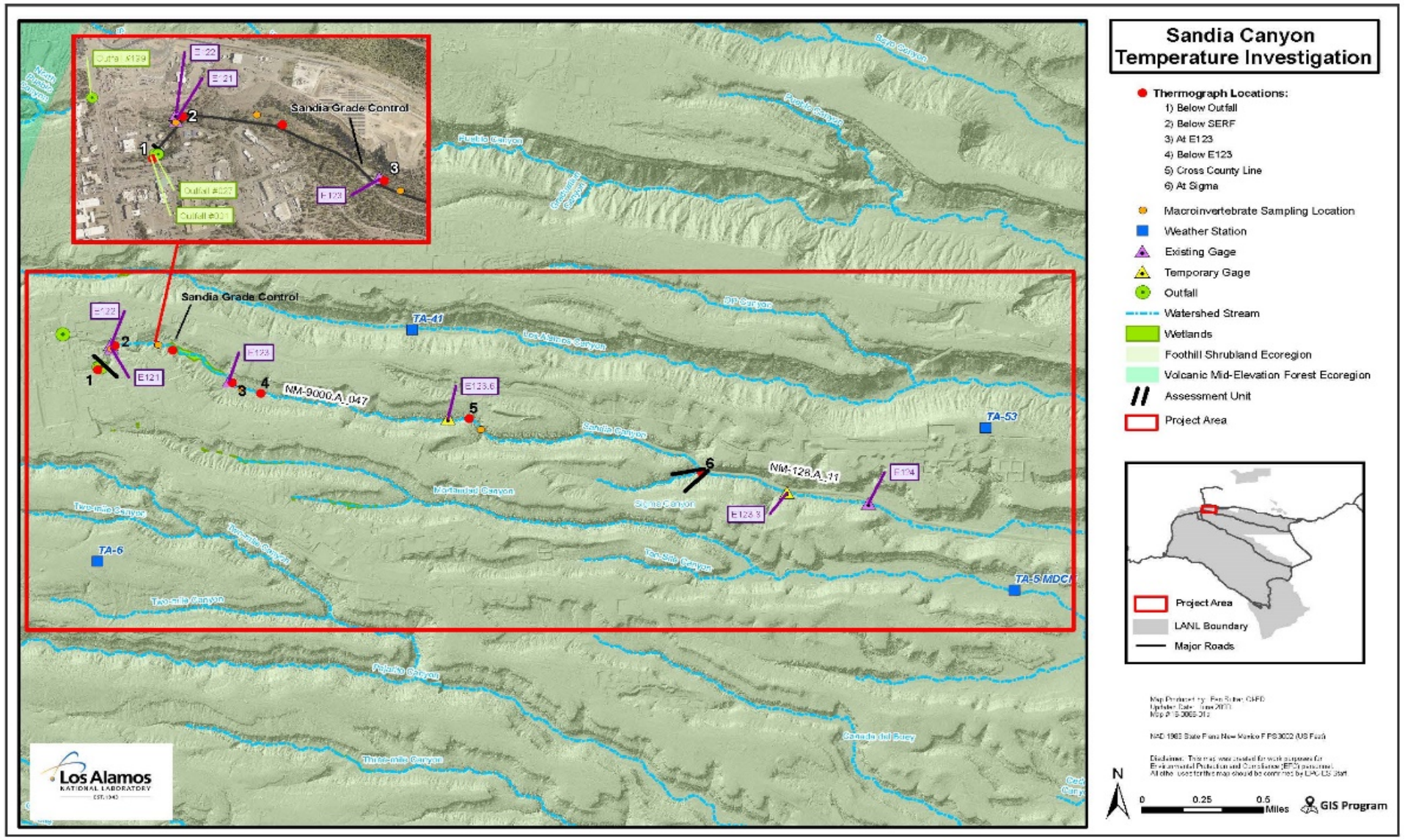
Perennial Reach of Sandia Canyon
Classified Segment - 20.6.4.126 NMAC
Assessment Unit NM-9000.A_47

February 23, 2022

Accord Technical Exchange Meeting (ATEM)

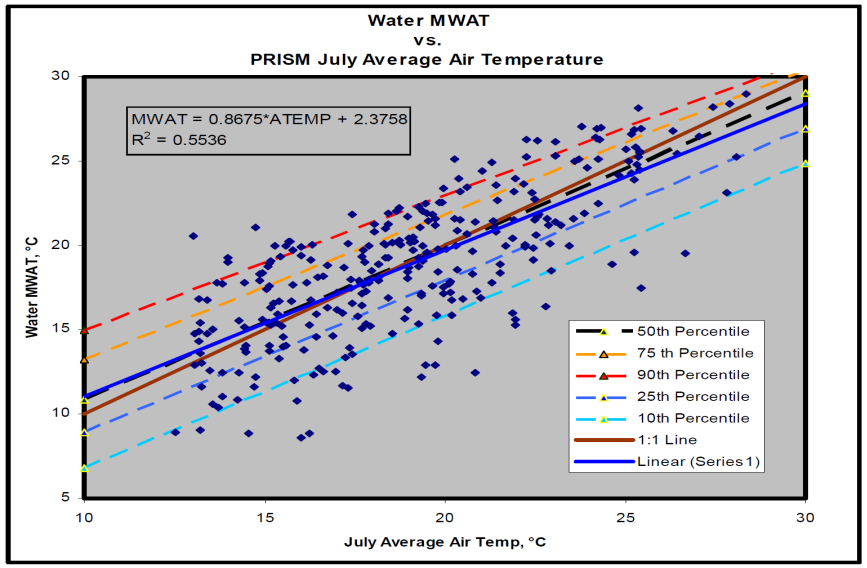
LA-UR-20-XXXX

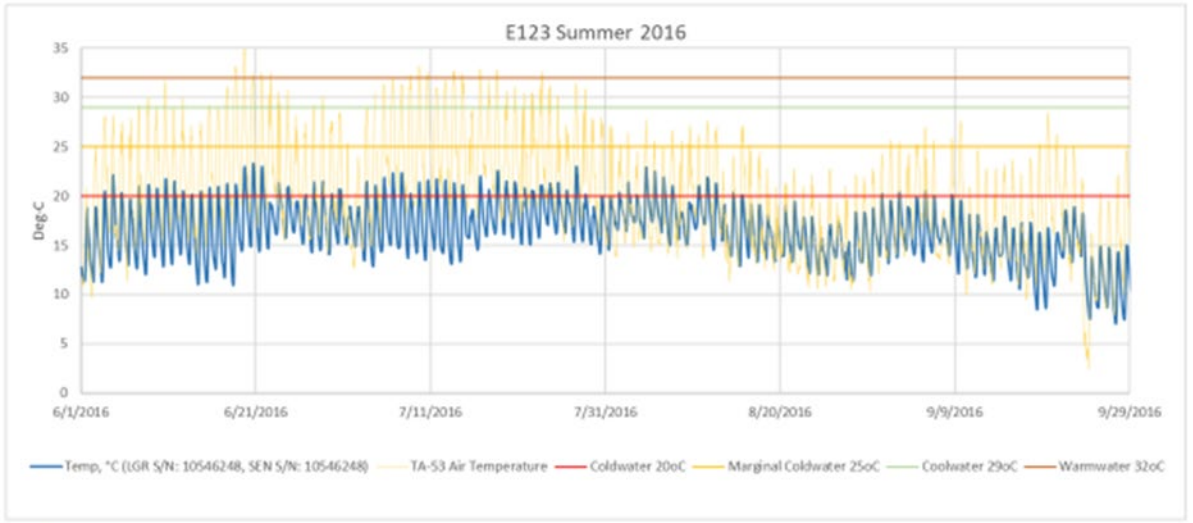
Study Area – Assessment Unit NM-9000.A_47



Lines of Evidence Examined:

- Air-Water Temperature Correlation Model
- Measured Water Temperatures
- USGS – SSTEMP Model





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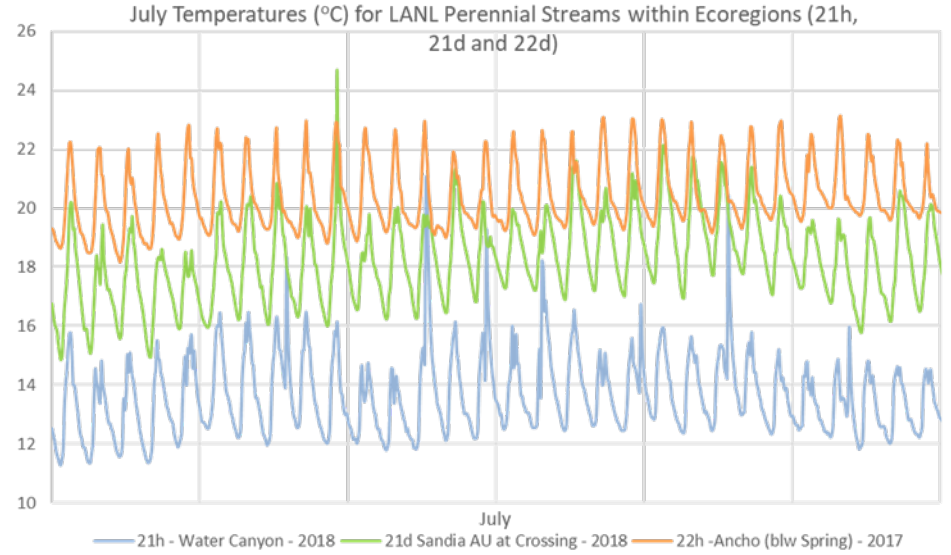

Line of Evidence and Attainable Use

Aquatic Life Use/Line of Evidence	Coldwater[a]	Marginal Coldwater[b]	Coolwater[c]	Warmwater[d]
NMED AWTC		X	X	X
SSTEMP		X	X	X
Instream Temperatures		X	X	X
MWAT		X	X	X
DO/pH	X	X	X	X
Ecoregion		X	X	X

a. *in reference to an aquatic life use means a surface water of the state where the water temperature and other characteristics are suitable for the support or propagation or both of coldwater aquatic life.*
b. *in reference to an aquatic life use means that natural intermittent or low flows, or other natural habitat conditions severely limit maintenance of a coldwater aquatic life population or historical data indicate that the temperature in the surface water of the state may exceed 25°C (77°F).*
c. *in reference to an aquatic life use means the water temperature and other characteristics are suitable for the support or propagation of aquatic life whose physiological tolerances are intermediate between and may overlap those of warm and coldwater aquatic life.*
d. *reference to an aquatic life use means that water temperature and other characteristics are suitable for the support or propagation or both of warmwater aquatic life.*

Summary

- The current designated use for the upper Sandia Canyon AU is coldwater.
- Multiple lines of evidence indicate that the coldwater aquatic life use is unattainable
- The highest attainable designated use in the upper Sandia Canyon AU is coolwater with a TMAX criterion of 29°C.
  - AWTC model predicted TMAX and 6T3 temperatures indicate the designated use that can be consistently attained is coolwater (warmwater was attainable in some yeas).
  - SSTEMP model results support the AWTC model findings that mean air temperatures have the greatest influence over estimated mean stream temperatures.
- Instream thermograph temperature data collected at multiple locations in the Upper Sandia Canyon AU over a 5 year period.
  - Data indicate warmwater aquatic use can be consistently attained across all study years.
  - Coolwater aquatic use can be attained at all locations during most of the years.
  - DO and pH criteria are consistently met for both coldwater and coolwater uses.
- The most protective and attainable designated use for the Upper Sandia Canyon AU is Coolwater.

Discussion & Input

- December 20, 2021 - 45-day public comment period begins
- January 13, 2022 – Final UAA draft distributed to Accord Pueblos
- January 20, 2022 – Public comment period extended 30-days
- Comments can be sent to sandiacanyonuaa@lanl.gov
- Comments accepted through March 7, 2022.

For Questions Please Contact:

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